

## SEQUENCE LISTING

<110> LABORATOIRE FRANÇAIS DU FRACTIONNEMENT ET DES BIOTECHNOLOGIES  
BOUREL, Dominique  
GLACET, Arnaud  
JORIEUX, Sylvie  
STURA, Enrico  
DUCANCEL, Frédéric  
TEILLAUD, Jean-Luc

<120> USE OF METALLIC CATIONS TO IMPROVE FUNCTIONAL ACTIVITY OF ANTIBODIES

<130> D 21 711 NT

<140> PCT/FR2004/002687

<141> 2004-10-20

<150> FR 03 12228

<151> 2003-10-20

<160> 2

<170> PatentIn version 3.3

<210> 1

<211> 1428

<212> DNA

<213> Homo sapiens

<220>

<223> cDNA sequence of double mutant His310-435Lys

<400> 1  
atggagtttg ggctgagctg ggtttcctc gttgctctt taagaggtgt ccagtgtcag 60  
gtgcagctgg tggagtctgg gggaggcgtg gtccagcctg ggaggtccct gagactctcc 120  
tgtacagcct ctggattcac cttcaaaaac tatgctatgc attgggtccg ccaggctcca 180  
gccaaaggggc tggagtgggt ggcaactata tcatatgatg gaaggaatat acaatatgca 240  
gactccgtga agggccgatg caccttctcc agagacaatt ctcaggacac cctgtatctg 300  
caactgaaca gcctcagacc ggaggacacg gctgtgtatt actgtgcgag acccgtaaga 360  
agccgatggc tgcaattagg tcttgaagat gctttcata tctggggcca gggacaatg 420  
gtcaccgtct cttcagcctc caccaagggc ccatcggtct tccccctggc accctcctcc 480  
aagagcacct ctggggcac agcggccctg ggctgcctgg tcaaggacta cttcccgaa 540  
ccgggtacgg tgtcgtggaa ctcaggcgcc ctgaccagcg gcgtgcacac cttcccgct 600  
gtcctacagt cctcaggact ctactccctc agcagcgtgg tgaccgtgcc ctccagcagc 660  
ttgggcaccc agacctacat ctgcaacgtg aatcacaagc ccagcaacac caaggtggac 720  
aagaaagttg agcccaaatc ttgtgacaaa actcacacat gcccaccgtg cccagcacct 780

gaactcctgg	ggggaccgtc	agtcttcctc	ttccccccaa	aacccaagga	caccctcatg	840
atctcccgga	cccctgaggt	cacatgcgtg	gtggtggacg	tgagccacga	agaccctgag	900
gtcaagttca	actggtacgt	ggacggcgtg	gaggtgcata	atgccaagac	aaagccgcgg	960
gaggagcagt	acaacagcac	gtaccgtgtg	gtcagcgtcc	tcaccgtcct	gaagcaggac	1020
tggctgaatg	gcaaggagta	caagtgcag	gtctccaaca	aagccctccc	agcccccattc	1080
gagaaaacca	tctccaaagc	caaagggcag	ccccgagaac	cacaggtgta	caccctgccc	1140
ccatcccggg	atgagctgac	caagaaccag	gtcagcctga	cctgcctggt	caaaggcttc	1200
tatcccagcg	acatcgccgt	ggagtggag	agcaatggc	agccggagaa	caactacaag	1260
accacgcctc	ccgtgctgga	ctccgacggc	tccttcttcc	tctacagcaa	gctcaccgtg	1320
gacaagagca	ggtggcagca	gggaaacgtc	ttctcatgct	ccgtgatgca	tgaggctctg	1380
cacaacaagt	acacgcagaa	gagcctctcc	ctgtctccgg	gtaaatag		1428

<210> 2  
 <211> 475  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> Peptide sequence of double mutant His310-H435Lys.

<400> 2

Met Glu Phe Gly Leu Ser Trp Val Phe Leu Val Ala Leu Leu Arg Gly  
 1 5 10 15

Val Gln Cys Gln Val Gln Leu Val Glu Ser Gly Gly Val Val Gln  
 20 25 30

Pro Gly Arg Ser Leu Arg Leu Ser Cys Thr Ala Ser Gly Phe Thr Phe  
 35 40 45

Lys Asn Tyr Ala Met His Trp Val Arg Gln Ala Pro Ala Lys Gly Leu  
 50 55 60

Glu Trp Val Ala Thr Ile Ser Tyr Asp Gly Arg Asn Ile Gln Tyr Ala  
 65 70 75 80

Asp Ser Val Lys Gly Arg Cys Thr Phe Ser Arg Asp Asn Ser Gln Asp  
 85 90 95

Thr Leu Tyr Leu Gln Leu Asn Ser Leu Arg Pro Glu Asp Thr Ala Val  
 100 105 110

Tyr Tyr Cys Ala Arg Pro Val Arg Ser Arg Trp Leu Gln Leu Gly Leu  
115 120 125

Glu Asp Ala Phe His Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser  
130 135 140

Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser  
145 150 155 160

Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp  
165 170 175

Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr  
180 185 190

Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr  
195 200 205

Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln  
210 215 220

Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp  
225 230 235 240

Lys Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro  
245 250 255

Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro  
260 265 270

Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr  
275 280 285

Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn  
290 295 300

Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg  
305 310 315 320

Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val  
325 330 335

Leu Lys Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser  
340 345 350

Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys  
355 360 365

Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp  
370 375 380

Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe  
385 390 395 400

Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu  
405 410 415

Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe  
420 425 430

Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly  
435 440 445

Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn Lys Tyr  
450 455 460

Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys  
465 470 475